

Nuclear Science Center Reactor Upgrades

PI: W.D. Reece- Texas A&M University Collaborators: NA

Program: Major Reactor Infrastructure

ABSTRACT:

The Texas A&M Engineering Experiment Station (TEES), Nuclear Science Center (NSC) is applying for a Nuclear Energy University Programs – Major Reactor Upgrades grant, titled Nuclear Science Center Reactor Upgrades, as identified in DE-FOA-0000815 under the supervision of the NSC Director, Dr. W.D. Reece (PI) and the NSC Associate Director, Dr. Radek Skoda (Co-PI). The total value of the proposal is \$1,186,258 and focusing on increasing the availability and improve the safety of the reactor for use in its education, training, and research mission. We have been diligent stewards; however, several of the main reactor support systems are over 50 years old and critically in need of replacement. The upgrades proposed here are essential and will provide lasting capability while maintaining high levels of safety and security of the reactor.

Specifically, this proposal requests replacement of our current heat exchanger that is now beyond repair. The proposal also allows for replacement of facility air monitors, vital upgrades of the demineralizer system, upgrade of console and area radiation monitors, a HPGe detector and software, compensated ion and fission chambers for reactor control, an alpha/beta counter for contamination control, and a vertical milling machine. Also, the NSC proposes to purchase an underwater camera system, radiation trash compactor, and a telemanipulator hot cell. Over the last several years, using NEUP grants and internal funds, we have replaced a 20-year old cooling tower and fire alarm system, upgraded many outdated pieces of equipment as well as provided a study to allow for a power up-rate to about 1.25 MW. In 2006, we converted the core from HEU to LEU fuel that will last for the next two decades. Our goal now is to update and replace the reactor support systems so that they, too, will be operational for decades, ensuring the NSC's safe and reliable operation. We expect our Nuclear Engineering Department and the College of Engineering at Texas A&M to continue to grow and with this growth we expect to see even more students utilizing the reactor for laboratories, research, training, and employment. We also expect the use of the reactor for research to expand in the coming year.